

AMENDMENTS TO THE SPECIFICATION

Please replace paragraph [0002] with the following Amended paragraph:

~~Aspects of the present invention~~ General aspects of examples described herein relate to reproduction of a storage medium recording moving picture data, and more particularly, to a storage medium recording subtitle information compatible with a subpicture method of a digital versatile disc (DVD) and a presentation method of a bluray disc, and based on text corresponding to moving picture data having a plurality of playback routes. ~~Other general aspects of examples described herein of the invention~~ relate to an apparatus for and a method of reproducing a moving picture from the moving picture data on the storage medium.

Please replace paragraphs [0007] and [0008] with the following Amended paragraphs:

To solve the above and/or other problems, general aspects of examples described herein may of the present invention provide a storage medium recording subtitle information compatible with a subpicture method of a DVD and a presentation method of a bluray disc, based on text corresponding to moving picture data having a plurality of playback routes. Additional general aspects of examples described herein may the invention provide an apparatus for reproducing and a method of reproducing compatible with the subpicture method of the DVD and the presentation method of the bluray disc.

According to [[an]] one general aspect of the present invention a storage medium includes: moving picture data having a plurality of playback routes; a plurality of subtitle data items corresponding to the playback routes and supporting random search for a subtitle; and mapping information linking the moving picture data and the subtitle data.

Please replace paragraph [0017] with the following Amended paragraph:

According to another general aspect of the present invention, a reproducing apparatus for reproducing a storage medium on which moving picture data is recorded includes: a decoder decoding moving picture data having a plurality of playback routes; and a subtitle processor converting subtitle data, corresponding to a predetermined route and selected by using a plurality of subtitle data items corresponding to the playback routes and supporting random search for a subtitle

and mapping information linking the moving picture data and the subtitle data, into pixel data, synchronizing the converted pixel data with the moving picture data, and outputting the pixel data.

Please replace paragraphs [0022] and [0023] with the following Amended paragraphs:

According to [[an]] yet another general aspect of the present invention, another a method of reproducing data on a storage medium storing moving picture data having a plurality of playback routes, a plurality of subtitle data items corresponding to the playback routes and supporting random search for a subtitle, and mapping information linking the moving picture data and the subtitle data, includes: reading the subtitle data corresponding to moving picture data of a route to be reproduced by parsing the mapping information; identifying subtitle data of a position to be reproduced according to continuous reproduction or reproduction by random search, by parsing the subtitle data, and converting the subtitle data into pixel data; and synchronizing the converted pixel data with the moving picture data and outputting the pixel data.

By using the mapping information and the subtitle data file structure according to [[the]] general aspects of the examples described herein present invention, subtitle information compatible with a bitmap image method such as the subpicture method of a DVD and the presentation method of a bluray disc, and based on text corresponding to moving picture data having a plurality of playback routes, can be provided.

Please replace paragraphs [0025]-[0029] and the Heading preceding paragraph [0027] with the following Amended paragraphs and Heading:

Additional aspects and/or advantages of the invention features will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

These and/or other aspects and advantages of the invention features will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

FIG. 1 is a reference diagram explaining a conventional text-based subtitle technology;

FIG. 2 is a reference diagram explaining problems of the conventional text-based subtitle technology illustrated in FIG. 1;

FIG. 3 is a reference diagram explaining an example of text-based subtitle information corresponding to moving picture data having a plurality of playback routes ~~according to an embodiment of the present invention~~;

FIG. 4 is a diagram explaining an example of mapping information of moving picture data and subtitle data having the plurality of playback routes shown in FIG. 3;

FIG. 5 is a diagram explaining an example of subtitle indication information by language corresponding to moving picture data having the plurality of playback routes;

FIG. 6 is a diagram explaining an example of a structure of subtitle data;

FIG. 7 is a diagram explaining an example of a usage example of each field of subtitle data having the data structure shown in FIG. 6;

FIG. 8 is a diagram illustrating an example that explains explaining a structure of a reproducing apparatus ~~according to an embodiment of the present invention~~;

FIG. 9 is a diagram explaining an example of a structure of the subtitle processor shown in FIG. 8;

FIG. 10 is a flowchart [[of]] illustrating an example of a method of reproducing subtitle information based on text corresponding to moving picture data having a plurality of playback routes ~~according to an embodiment of the present invention~~;

FIG. 11 is a diagram explaining an example of the data structure of mapping information shown in FIG. 4 implemented on a DVD disc;

FIG. 12 is a diagram showing an example of the mapping information shown in FIG. 11 implemented by using a markup language on a DVD disc;

FIG. 13 is a diagram showing an example of the mapping information shown in FIG. 11 described in the form of a table implemented on a DVD disc;

FIG. 14 is a diagram explaining an example of the structure of subtitle data shown in FIG. 6 implemented on a DVD disc;

FIGS. 15A and 15B are diagrams showing an example of the subtitle data shown in FIG. 6 implemented on a DVD disc displayed on a screen;

FIG. 16 is a diagram showing an example of the subtitle data shown in FIG. 6 implemented by a markup language on a DVD disc;

FIG. 17 is a diagram showing an example of the subtitle data shown in FIG. 6 implemented in a binary table on a DVD disc;

FIG. 18 is a diagram explaining an example of the data structure of the mapping information shown in FIG. 4 implemented on a bluray disc;

FIG. 19 is a diagram showing an example of the mapping information shown in FIG. 18 implemented by using a markup language on a bluray disc;

FIG. 20 is a diagram showing an example of the mapping information shown in FIG. 18 implemented in a table on a bluray disc;

FIG. 21 is a diagram explaining an example of the structure of the subtitle data shown in FIG. 6 implemented on a bluray disc;

FIGS. 22A and 22B are diagrams showing an example of the subtitle data shown in FIG. 6 implemented on a bluray disc displayed on a screen;

FIG. 23 is a diagram showing an example of the subtitle data shown in FIG. 6 implemented by a markup language on a bluray disc; and

FIG. 24 is a diagram showing an example of the subtitle data shown in FIG. 6 implemented in a binary table on a bluray disc.

DETAILED DESCRIPTION OF THE EMBODIMENTS

Reference will now be made in detail to ~~the present embodiments of the present invention~~, examples [[of]] which are illustrated in the accompanying drawings, wherein like reference numerals refer to the like elements throughout. The ~~embodiments examples~~ are described below ~~in order to explain the present invention~~ by referring to the figures.

FIGS. 3 through 7 are diagrams explaining examples of mapping information of moving picture data and subtitle data having a plurality of playback routes and the structure of subtitle data ~~according to an embodiment of the present invention~~.

FIGS. 8 and 9 are diagrams explaining examples of a structure of a reproducing apparatus, ~~according to an embodiment of the present invention~~ and FIG. 10 is a flowchart illustrating an example of a method of reproducing subtitle data, ~~according to an embodiment of the present invention~~

Please replace paragraph [0037] with the following Amended paragraph:

FIG. 6 is a diagram explaining an example of a structure of subtitle data ~~according to an embodiment of the present invention~~. FIG. 6 shows the structure of a plurality of subtitle data linked by related subtitle indication information included in the subtitle/video mapping information described above with reference to FIG. 4. The subtitle data includes header information, reference offset information, time information and/or text information. The header information is information on the entire subtitle data and may include position information of a subtitle to be displayed on a screen, and international standard record code (ISRC) as information on a producer or a support language code.

Please replace paragraph [0043] with the following Amended paragraph:

Based on the data structure of the storage medium described above, an apparatus for reproducing the storage medium will now be described. FIG. 8 is a diagram explaining an example of a structure of a reproducing apparatus ~~according to an embodiment of the present invention~~.

Please replace paragraph [0043] with the following Amended paragraph:

Rendering in ~~the present invention~~ general aspects of examples described herein indicates all required activities related to converting subtitle text data into graphic data to express the text data on a display apparatus. That is, the rendering indicates all processes for finding a font matching a character code of each character in text data, from download font data read from an information storage medium, or from the resident font data, converting into a graphic, and outputting on a screen.

Please replace paragraph [0056] with the following Amended paragraph:

FIG. 10 is a flowchart illustrating an example of a method of reproducing text-based subtitle information corresponding to moving picture data having a plurality of playback routes ~~according to~~

~~an embodiment of the present invention~~. Referring to FIG. 10, in order to support multiple language subtitles and multiple story playback, a subtitle indication information item corresponding to a language selected by a user or set as a default in a reproducing apparatus is read among subtitle indication information by language (Refer to FIG. 5) in operation 1002. By parsing subtitle indication information corresponding to the selected language, linked subtitle/video mapping information is read in operation 1004. By parsing the read subtitle/video mapping information, subtitle data linked to video data of a route to be reproduced is read in operation 1006. Based on style information and text information included in the read subtitle data, pixel data for a bitmap image graphic is generated in operation 1008. By controlling a time and position for outputting a subtitle based on control information included in the subtitle data, the generated pixel data is output in operation 1010.

Please replace paragraph [0075] with the following Amended paragraph:

In order to generate the pixel data as shown in FIGS. 15A and 15B based on the subtitle data of FIG. 16, style information as the following is included in the text-based subtitle data according to general aspects of examples described herein ~~the present invention~~.

Please replace paragraphs [0110] and [0111] with the following Amended paragraphs:

~~The present invention~~ General aspects of examples described herein can also be embodied as computer readable codes on a computer readable recording medium. The computer readable recording medium is any data storage device that can store data which can be thereafter read by a computer system. Examples of the computer readable recording medium include read-only memory (ROM), random-access memory (RAM), CD-ROMs, magnetic tapes, floppy disks, optical data storage devices, and carrier waves (such as data transmission through the Internet). The computer readable recording medium can also be distributed over network coupled computer systems so that the computer readable code is stored and executed in a distributed fashion.

As described above, by using the mapping information and the subtitle data file structure according to general aspects ~~the embodiments of examples described herein~~ ~~the present invention~~, subtitle information compatible with a bitmap image method such as the subpicture method of a

DVD and the presentation method of a bluray disc, and based on text corresponding to moving picture data having a plurality of playback routes can be provided.

Please replace paragraph [0113] with the following Amended paragraph:

Although a few ~~embodiments of the present invention~~ examples have been shown and described, it would be appreciated by those skilled in the art that changes may be made in this embodiment without departing from the principles and spirit of examples described herein ~~the invention~~, the scope of which is defined in the claims and their equivalents.